DOCUMENT RESUME

ED 263 138 TM 850 609

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TITLE Concurrent Validity Study of the Computer Attitude Scale (CAS).
PUB DATE 2 May 85
NOTE 11p.; Paper presented at the Annual Meeting of the Midwestern Psychological Association, (Chicago, IL., May 2-4, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adults; *Attitude Measures; *Computer Literacy; Correlation; *Performance Factors; Predictive Measurement; *Programers; Screening Tests; Self Evaluation (Individuals); *Test Validity; Vocational Evaluation
IDENTIFIERS Computer Attitude Scale

ABSTRACT

A concurrent validity study of the Computer Attitude Scale (CAS) was undertaken to index criteria-related validity through available performance evaluation data of 47 computer programmers and operators at a large, Midwest public utility organization. A Pearson product-moment correlation coefficient of CAS scores with performance evaluations indicated high validity of the instrument. In agreement with prior research findings, both age and sex are significantly related to CAS scores. The results confirmed the hypothesis that computer attitudes and performance are linked. Implications of the results are discussed with regard to the use of the CAS as a screening/placement and training instrument. (Author/PN)

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Concurrent validity study of the Computer Attitude Scale (CAS)

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TM 850 609

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Abstract

A concurrent validity study of the Computer Attitude Scale (CAS) (Nickell & Pinto, 1984) was undertaken to index critera-related validity through available performance evaluation data of 47 computer programmers and operators at a large, midwest, public utility organization. A Pearson product-moment correlation coefficient of CAS scores with performance evaluations indicated high validity of the instrument, $r(46)=+.63$, $p.<001$. In agreement with prior research findings, both age and sex were significantly related to CAS scores. Implications of the results were discussed with regard to the use of the CAS as a placement and training instrument.

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Concurrent validity study of the Computer Attitude Scale (CAS)

The rise of computer application in education, hospitals, and business organizations has stimulated an increasing number of research efforts in understanding the impact of computers on the attitudes of those who will inevitably use this new technology. For example, Startsman and Robinson (1972) devised and administered a short attitude scale in an attempt to provide information concerning the optimal interfacing of a computer-based information system with a medical staff. An examination of the literature concerned with the construction of instruments designed to measure computer attitudes reveal that most approaches generally follow a similar format (e.g., Reece & Gable, 1982; Miura & Hess, 1983).

The process begins with the operational definitions of the attitudes under investigation, usually followed by a refined list of bi-polar adjectives or Likert-type scaled questions which attempt to elicit either positive or negative attitudes toward computers. Questions of an open-ended nature are often included to further probe the effects of other variables associated with computer attitudes. The end result is an instrument in need of support through reliability coefficients and ultimately validation.

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Another example of a computer attitude instrument, which is specifically addressed to assess computer attitudes in organizational settings is the Computer Attitude Scale (CAS) (Nickell & Pinto, 1984). The CAS is a self-report measure of individual differences of computer attitudes, consisting of 20 Likert-type items whereby the subjects indicate their level of agreement or disagreement to each item. The authors of the CAS have reported reliability and validity data for the scale from normed samples of college students. Internal consistancy and split-half reliability coefficients of .82 and .75 respectively, were obtained as the two primary reliability indices. A predictive validity coefficient of .32 ($p.<.002$) was reported through correlation of prior CAS scores with final grades in an introductory computer class. Although this validity coefficient was considered an adequate representation of the instrument's predictive capabilities, Nickell & Pinto (1984) suggest that future research, specifically in the area of criteria validity of actual workers in an organizational setting, would strengthen the validity of the CAS.

The purpose of this study was to index criteria-related validity through current available performance evaluation data. Concurrent validity is established by relating test scores with criterian values or catagories that are available at the same time. Usually, this involves "the correlation of test scores with currently available criteria or job performance of the individuals in question"

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(McCormick & Tiffin, 1974, p.103). It is expected that those individuals who score high on the CAS (indicating a more positive attitude toward computers) will also recieve higher performance evaluations. Should this investigation support the previously stated hypothesis, then further confidence in identifying the role that computer attitudes play in regard to actual job performance will be strengthened.

Method

Subjects

A total of 47 computer programmers and terminal operators (24 males and 23 females), whose ages ranged from 20 to 59 years, were obtained from a large, midwest, public utility organization. All participants were volunteers who held full-time employment status with the organization.

Materials

CAS questionnaires were supplied to the computer programmers' and operators' immediate supervisor along with appropriate performance evaluation data sheets. Performance evaluation ratings were obtained for each employee by the employees' supervisor.

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Procedure

Administration of the CAS was performed by the supervisor during the employees morning break period. The experimenter instructed the supervisor concerning administration procedures which included assuring all participants that results were for the use of research purposes only, and would in no way be used to evaluate employees. Upon completion of the CAS and accompanying demographic data, participants signed the questionnaires and returned them to the supervisor, who numerically coded each to facilitate later pairings of CAS scores and performance evaluation ratings.

After all questionnaires were completed, signed, returned, and coded, the supervisor obtained each employees most recent performance evaluation rating. The evaluation ratings used were global indices ranging from 1 to 5 (ie., 1=poor, 5=excellent). When all performance ratings were matched with appropriate CAS questionnaires, the supervisor removed signatures to ensure confidentiality, and returned the materials to the experimenter for correlational analysis.

Results

A Pearson product-moment correlation coeffecient of +.63 ($p < .001$) was obtained between CAS scores and performance ratings. Additional results showed that scores

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on the CAS were negatively related to age, indicating that younger workers had more positive attitudes than older workers, .32 ($p.<.05$), and male employees scored significantly higher on the CAS than females, .32 ($p.<.05$). Results concerning sex and age emulate previous research conducted with college students as subjects (Nickell & Pinto, 1984).

Discussion

Molnar (1978) relates the importance of computer literacy in our society's educational institutions as analgous to that of reading literacy. Since computer use is dramatically increasing in business organizations, application of this view to these settings would seem logical. Thus, investigating the effects of computers on employees, and the attitudes that employees have toward computers appears warranted. In order to conduct research in this area, however, an understanding of the attitude-behavior relationship is essential. Myers (1983) posits that if an attitudinal instrument attempts to predict behaviors, then the attitudes obtained must be specifically related to behaviors.

The result of this study has confirmed the hypothesis that computer attitudes and performance are indeed linked. Which variable predicts the other, up to this point, has yet to be determined. Nonetheless, these results are encouraging. Especially in light of the research conducted

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by Nickell & Pinto (1984) whereby grades (performance measure) of an introductory computer class were successfully predicted from CAS scores.

Future application of the CAS to computer organizations could be conducted in much the same manner as the Nickell & Pinto (1984) research with introductory computer students. Predictions of worker performance would be based on new, transferred, or promoted (without prior computer work experience) employee CAS scores. After a determined amount of time (e.g., 6 months to 1 year), evaluations of these employees would be collected and comparisons made between CAS scores and performance levels.

Consideration may also be given to the type of performance evaluation used. For example, it may be desirable to obtain more specific performance data than global indices. This approach may provide more descriptive and accurate performance levels, and correlate more closely with CAS scores.

The purpose of the CAS is to predict behaviors related to computers by assessing computer attitudes. As an initial screening device, the CAS would help employers to discern between applicants having significantly different attitudes toward computers, thereby facilitating placement. Another feasible area of application deals with determining current employees attitudes about computers before interfacing occurs. If management were able to obtain such data, more

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refined plans could be formulated to orientate, counsel, and train employees concerning computer interaction.

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